

of July 1913. The results of both series of determinations are plotted graphically, and furnish many interesting details regarding the conditions for plant life in such a habitat. The variations in soil moisture, although considerable, do not indicate that this is the factor of most importance in promoting the greater mesophytism of the ravine habitat as compared with the upland. Evaporation differences show more contrast in these two habitats, as may be shown by a few examples. The average daily rates of evaporation from the standard atmometer for the open upland, the forested upland, the south-facing slope, the north-facing slope, and the bottom of the ravine were respectively 16.3, 8.7, 7.9, 6, and 4.7 cc. This shows very definitely that the more or less confined atmosphere of the lower parts of rather narrow ravines has frequently only about one-half the evaporating power possessed by more freely circulating air of the forested upland. Maps of the region north of Chicago in which the ravine is located and of the ravine itself, together with the tabulation and plotting of data and photographs of the vegetation at the various stations, add to the value of the paper.—GEO. D. FULLER.

**New Zealand vegetation.**—A non-technical but truly scientific description of the vegetation of any land is interesting and useful, even to botanists, in forming a general concept of the plant growth of that region. In such an article COCKAYNE<sup>20</sup> has sketched the flora of New Zealand, and has managed to include many facts within the limits of a few pages. Analyzing the composition and affinities of the flora, he finds 74 per cent endemic, while Malayan, Australian, and subantarctic elements follow in decreasing importance, and the final touch is given by a remarkable element composed of species either closely related to or identical with those of the northern hemisphere.

Among the various plant communities characterized are the rain forest, the southern beech forest, the tussock steppe, the swamp, and the subalpine fell-field. The first of these originally covered all the lowland and montane regions of North Island, and considerable portions of the west and south of South Island. This rain forest was remarkable for the abundance of conifers in such genera as *Dacrydium*, *Podocarpus*, and *Agathis*, mingled with broad-leaved evergreens, woody climbers, ferns, mosses, and liverworts in luxuriant profusion. Very different from the rain forest, but quite as distinctive, was the tussock steppe, dominated by large grasses of the tussock habit of growth. The principal species were *Danthonia Raoulii*, *Poa caespitosa*, and *Festuca novae-zealandiae*. Somewhat less attention is devoted to the beech forest with five species of *Nothofagus*, the heath thickets, swamps, sand dunes, and mountains; while the article closes with some statistics of plant families, genera, and species.—GEO. D. FULLER.

<sup>20</sup> COCKAYNE, L., The primitive vegetation of New Zealand. Jour. Agric. (New Zealand) 9:401-410. 1914.